

National Aeronautics and Space Administration

CGRO

FINAL TECHNICAL REPORT FOR NAG 5-2235

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“CGRO Observations”

Philip Kaaret

This grant funded work on the Compton the cycle 4 investigations “Diffuse Gamma-Ray Emission at High Latitudes” and “Echoes in X-Ray Novae”; the cycle 5 investigations, “A Localized Excess of Gamma-Radiation,” “Transient Hard X-Ray Emission from Globular Clusters,” and “A Search for Be/X-Ray Binaries in Hard X-Rays”; and the cycle 6 investigations “Hard X-Ray Emission from X-Ray Bursters” and “X-Ray Transients in Star-Forming Regions.” It also funded involvement as co-investigator on “Gamma-ray Emission from Globular Clusters,” “Shock High Energy Emission from the Be-Star/Pulsar System PSR 1259-63m” “Gamma-Ray Spectroscopy of Nearby OB Associations,” “Long Term Hard X-Ray Monitoring of X-Ray Bursters,” and “Periodic Hard X-Ray Emission from GRO J1849-03.”

This investigation has provided partial salary and travel support for four graduate students Andrew Chen, Eric Ford, Jean Cottam, and John Tomsick, and also for Prof. Philip Kaaret (PI) and Dr. Marco Tavani. Andrew Chen, now Dr. Chen, received his Ph.D. from Columbia University in May 1997, based mainly on results obtained under this investigation. Dr. Chen is now a National Research Council Postdoctoral Research Scientist at the NASA Goddard Space Flight Center. The investigation has lead to several publications in the *Astrophysical Journal* and in *Astronomy and Astrophysics*.

Publications from NAG5-2235:

- “Gamma-Ray Blazars and the Extragalactic Background,” A. Chen and P. Kaaret, submitted to the *Astrophys. J.* (1997).
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- “Anticorrelated Hard/Soft X-Ray Emission from the X-Ray Burster 4U 0614+091,” E. Ford, P. Kaaret, B.A. Harmon, M. Tavani, S.N. Zhang, D. Barret, J. Grindlay, P. Bloser, and R.A. Remillard, *Astrophys. J. Letters*, **469**, L37-L40 (1996).
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- “A Search for Hard X-Ray Emission from Globular Clusters: Constraints from BATSE,” E. Ford, P. Kaaret, B.A. Harmon, M. Tavani, and S.N. Zhang, *Astrophys. J.*, **467**, 272-279 (1996).
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- “A Localized Excess of Diffuse Gamma Radiation,” A. Chen, J. Dwyer, and P. Kaaret, *Astrophys. J. Letters*, **445**, L109-L112 (1995).
- “Gamma-Ray Observations of GRO J1655-40,” R. Kroeger, M.S. Strickman, J.E. Grove, P. Kaaret, E. Ford, B.A. Harmon, and M. McConnell, *Astron. Astrophys. Suppl.*, **120**, 117-120 (1996).
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- “High-Energy Emission from the PSR B1259-63 System Near Periastron,” M. Tavani, J.E. Grove, W. Purcell, . Hermesen, L. Kuiper, P. Kaaret, E. Ford, R.B. Wilson, M. Finger, B.A. Harmon, S.N. Zhang, J. Mattox, D. Thompson, and J. Arons, *Astron. Astrophys. Suppl.*, **120**, 221-226 (1996).
- “Periodic Transient Hard X-ray Emission from GRO J1849-03,” S.N. Zhang, B.A. Harmon, W.S. Paciesas, G.J. Fishman, M.H. Finger, C.R. Robinson, B.C. Rubin, J.E. Grindlay, D. Barret, M. Tavani, P. Kaaret, P. Bloser, and E. Ford, *Astron. Astrophys. Suppl.*, **120**, 227-230 (1996).

- “BATSE Observations of Two X-ray Bursters: 4U1820-30 and 4U1915-05,” P. Bloser, D. Barret, J.E. Grindlay, S.N. Zhang, B.A. Harmon, G.J. Fishman, W.S. Paciesas, E. Ford, P. Kaaret, and M. Tavani, *Astron. Astrophys. Suppl.*, **120**, 275-278 (1996).
- “Low State Hard X-ray Outburst from the X-ray Burster 4U1608-522 Observed by BATSE/CGRO”, S.N. Zhang, B.A. Harmon, W.S. Paciesas, G.J. Fishman, J.E. Grindlay, D. Barret, M. Tavani, P. Kaaret, P. Bloser, E. Ford, and L. Titarchuk, *Astron. Astrophys. Suppl.* **120**, 279-282 (1996).